IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Shashishekara Talya et al.	§	Group Art Unit:	3745
Serial No.: 10/813,720	§	Examiner:	Verdier, Christopher M.
Filed: March 31, 2004	§		
For: PELTON TURBINE SYSTEM AND METHOD	§	Atty. Docket:	136466-1/YOD GERD:0092

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April 30, 2007
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Lynda Howell

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on January 29, 2007, and received by the Patent Office on January 31, 2007.

The Commissioner is authorized to charge the requisite fee of $500.00, and any additional fees which may be necessary to advance prosecution of the present application, to Account No. 07-0868, Order No. 136466-1/YOD (GERD:0092).

Appellants hereby request a one (1) month extension in the statutory period for submission of the Appeal Brief, from March 31, 2007 to April 30, 2007, in accordance with 37 C.F.R. § 1.136. The Commissioner is authorized to charge the requisite fee of $120.00, and any other fee that may be required, to Deposit Account No. 07-0868, Order No. 136466-1/YOD (GERD:0092).

1. **REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company by Shashishekara Sitharamarao, Erno Daniel Jason, Rommetveit Olav, Sundsvold Einar Mikal, and Bjerke Morten, recorded at Reel 015173, Frame 0576, and dated March 31, 2004. Accordingly, General Electric Company, as the parent company of the Assignee of the above-referenced application, will be directly affected by the Board's decision in the pending appeal.

2. **RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. **STATUS OF CLAIMS**

Claims 1, 3-17, 27, 29, and 30 are currently pending. In the Final Office Action mailed on November 2, 2006, claims 1, 3-17, 27, 29, and 30 were allowed, and claims 19-26 were rejected. Claims 2, 18 and 28 were earlier canceled.

4. **STATUS OF AMENDMENTS**

Purely formal amendments were made to claim 23 after the Final Office Action. The Examiner indicated in the Advisory Action that these would be entered for the purpose of this Appeal

5. **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention relates generally to the field of fluid impulse Pelton turbines. *See* Application, page 1, paragraph 1. More particularly, in certain embodiments, the invention relates to a system and method to increase the overall efficiency of the Pelton turbine. *See id.*

The Application contains eight independent claims, namely, claims 1, 11, 19, 21, 23, 27, 29, and 30 of which independent claims 19, 21, and 23 are the subject of this Appeal. The subject matter of these claims is summarized below.

With regard to the aspect of the invention set forth in independent claim 19, discussions of the recited features of claim 19 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with claim 19 provides a method for operating a Pelton turbine (*e.g.*, 10) comprising opening a needle valve (*e.g.*, 30) of a needle valve injector assembly (*e.g.*, 28) and a valve (*e.g.*, 38) of a high efficiency injector assembly (*e.g.*, 36) to a direct flow of water (*e.g.*, 16) from a distributor (*e.g.*, 16) to a runner (*e.g.*, 32). *See, e.g., id.* at paragraphs 32-35; *see also* FIGS. 6 and 7. The method further comprises controlling the needle valve (*e.g.*, 30) of the needle valve injector assembly (*e.g.*, 28) to regulate a desired flow of water (*e.g.*, 16) from the distributor (*e.g.*, 16) to the runner (*e.g.*, 32). *See, e.g., id.* at paragraphs 32-35; *see also* FIGS. 6 and 7. Further, the Pelton turbine (*e.g.*, 10) comprises at least two needle valve injector assemblies (*e.g.*, 28) alternately disposed with at least two high efficiency injector assemblies (*e.g.*, 36) to provide a modulated flow of water (*e.g.*, 16) from the needle valve injector assemblies (*e.g.*, 28). *See, e.g., id.* at paragraph 25; *see also* FIG. 2.

With regard to the aspect of the invention set forth in independent claim 21, discussions of the recited features of claim 21 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with claim 21 provides a method for operating a Pelton turbine (*e.g.*, 10) comprising substantially simultaneously regulating flow through a needle valve (*e.g.*, 30) of a needle valve injector assembly (*e.g.*, 28) and a high efficiency valve (*e.g.*, 38) of a high efficiency injector assembly (*e.g.*, 36) to direct a flow of water (*e.g.*, 16) from a distributor (*e.g.*, 16) to a runner (*e.g.*, 32). *See, e.g., id.* at paragraphs 32-35; *see also* FIGS. 6 and 7. The method further comprises controlling the needle valve (*e.g.*, 30) of the needle valve injector assembly (*e.g.*, 28) to regulate a desired flow of water (*e.g.*, 16)

from the distributor (*e.g.*, 16) to the runner (*e.g.*, 32). *See, e.g., id.* at paragraphs 32-35; *see also* FIGS. 6 and 7. Further, the Pelton turbine (*e.g.*, 10) comprises at least two needle valve injector assemblies (*e.g.*, 28) alternately disposed with at least two high efficiency injector assemblies (*e.g.*, 36) to provide a modulated flow of water (*e.g.*, 16) from the needle valve injector assemblies (*e.g.*, 28). *See, e.g., id.* at paragraph 25; *see also* FIG. 2.

With regard to the aspect of the invention set forth in independent claim 23, discussions of the recited features of claim 23 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with claim 23 provides a method for configuring a Pelton turbine (*e.g.*, 10) comprising disposing at least two needle valve injector assemblies (*e.g.*, 28) between a distributor (*e.g.*, 16) and a runner (*e.g.*, 32) of the Pelton turbine (*e.g.*, 10) to direct flow from the distributor (*e.g.*, 16) to the runner (*e.g.*, 32). *See, e.g., id.* at paragraph 19; *see also* FIG. 1. The method further comprising disposing at least two high efficiency injector assemblies (*e.g.*, 36) between the distributor (*e.g.*, 16) and the runner (*e.g.*, 32) to direct a portion of overall flow of water (*e.g.*, 16) from the distributor (*e.g.*, 16) to the runner (*e.g.*, 32). *See, e.g., id.* at paragraph 20; *see also* FIG. 1. Further, the Pelton turbine (*e.g.*, 10) comprises at least two needle valve injector assemblies (*e.g.*, 28) alternately disposed with at least two high efficiency injector assemblies (*e.g.*, 36). *See, e.g., id.* at paragraph 25; *see also* FIG. 2.

A benefit of the invention, as recited in these claims, is that a combination of the needle valve injector assembly (*e.g.*, 28) and the high efficiency injector assembly (*e.g.*, 36) leads to an optimal configuration of the injector designs in a Pelton turbine unit (*e.g.*, 10). Hence, the overall efficiency of the Pelton turbine (*e.g.*, 10) can be improved. As an example, in a six-injector Pelton Turbine, 3 high efficiency injector assemblies (*e.g.*, 36) comprising of a spherical valve (*e.g.*, 38) can replace 3 of the 6 needle valve injector assemblies (*e.g.*, 28). These 3 high efficiency injectors (*e.g.*, 36) will operate at very high

efficiency when the spherical valves (*e.g.*, 38) are fully open and thus improve the overall efficiency of the turbine. *See, e.g., id.* at pages 9 and 10, paragraph 31.

These are clear differences and distinctions from the prior art, as discussed below.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's first ground of rejection in which the Examiner rejected claims 19-24, and 26 under 35 U.S.C. § 102(b) as being anticipated by Moody, (U.S. Patent 1,776,392, hereinafter "Moody").

Second Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's second ground of rejection in which claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Moody in view of European Patent, (European Patent 1,308,619, hereinafter "European Patent").

7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under Sections 102 and 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board and reversal of the outstanding rejections. Appellants strongly believe that claims 19-26 are currently in condition for allowance.

Rebuttal of Examiner's Response to Argument

In the Advisory Action, the Examiner stated that the rejected claims do not recite any structural difference between the needle valve injector assemblies and the high efficiency injector assemblies. The Examiner also stated that elements 33 of Moody may be considered as both needle valve injector assemblies as well as high efficiency injector

assemblies. Appellants wish to point out that Moody discloses the same nozzles 33 disposed along the spiral casing or conduit. That is, Moody provides a single type of assembly (nozzles 33) while the foregoing claims require two different injector assemblies. Those arguments are renewed below.

A. **Ground of Rejection No. 1:**

Claims 19-24, and 26 were rejected under 35 U.S.C. § 102(b) as being anticipated by Moody. These rejections were made to independent claims 19, 21, and 23 in view of prior art.

1. **Judicial precedent has clearly established a legal standard for a *prima facie* anticipation rejection.**

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). Thus, for a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Appellants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

2. **The Examiner's rejection of claims 19-24, and 26 is improper because the rejection fails to establish a *prima facie* case of anticipation.**

Independent claims 19 and 21 recite, *inter alia*, "the Pelton turbine comprises at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies to provide a modulated flow of water from the needle valve injector assemblies." (Emphasis added.) Independent claim 23 recites, *inter alia*, "wherein the Pelton turbine comprises at least two needle valve injector

assemblies alternately disposed with at least two high efficiency injector assemblies." (Emphasis added.)

As disclosed in paragraph [0025] of the present patent application, the needle valve injector assemblies 28 and the high efficiency injector assemblies 36 are disposed alternately around the distributor 26. This arrangement is one of the methods of arranging the needle valve injector assemblies 28 and the high efficiency injector assemblies 36. The exact numbers and the arrangement of the needle valve injector assemblies 28 and the high efficiency injector assemblies 36 will depend upon such factors as the power requirements of the generator, the capacity of the Pelton turbine, and the particular system design. As noted above, the flow of water through the needle valve injector assemblies 28 is controlled through the operation of the needle valves 30 in the needle valve injector assemblies 28, which are typically coupled to hydraulic servomotors under the control of control modules 46. Similarly, each of the high efficiency injector assemblies 36 is also connected to an actuator, typically a rotary valve actuator responsive to control signals from a respective control module 44. The control modules of the needle valve injector assemblies 28 and the high efficiency injector assemblies 36 are connected to the central control unit 48, which controls the overall flow of water through the turbine, as well as the relative opening or closing of the various injectors.

With reference to Moody, FIG. 2 of this reference illustrates a spiral casing or conduit 30 encircling the runner. Leading from this pipe at circumferentially disposed points are branches 31, while the last nozzle is supplied through an elbow 32 forming a continuation of the end of the supply conduit. *See, e.g.,* Moody, page 3, lines 77-83. It will be noted that the nozzles 33 are disposed substantially in the plane of the supply conduit or spiral casing 30, which is also true of the branches 31. *See, e.g.,* Moody, page 3, lines 89-92. All of the nozzles 33 are illustrated identically, and referred to identically in the text.

a. **Interpretation of the Claims.**

First, the independent claims 19, 21, and 23 recite different types of injector assemblies, i.e. "needle valve injector assemblies" and "high efficiency injector assemblies". As regards the meaning of these terms, there are *two possibilities*. Either the terms mean the *same thing* or the terms may mean *different things*. Since different terms are used in the claims, it is not reasonable for the Examiner to ascribe the same meaning to the injector assemblies. Appellants wish to point out that section 2111, first paragraph of the MPEP specifically states that:

> During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." >The Federal Circuit's en banc decision in *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) expressly recognized that the USPTO employs the "broadest reasonable interpretation" standard.

Also, the specification of the present patent application clearly discloses that the terms have different meanings, and specification must be used for interpretation of the claims. Appellants wish to point out that section 2111, second paragraph of the MPEP specifically states that:

> The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 CFR 1.75(d)(1).

Therefore, the terms used in the claims on appeal do not mean the same injector assembly, but mean that the assemblies are different.

b. **A Reasonable Reading of Moody.**

Secondly, since the terms "needle valve injector assembly" and "high efficiency injector assembly" in the foregoing claims mean different structures, the Examiner must establish that Moody discloses the usage of different injector assemblies interspersed as recited in the foregoing claims. Moody uses the *same* reference numerals, the *same* images and the *same* words for all of the injectors of the turbine. Therefore, there is no reasonable basis then for interpreting Moody as teaching different injector assemblies. Since Moody does not teach *different* injector assemblies, the cited reference cannot read on the different injector assemblies recited in the claims.

Because Moody does not teach or suggest Pelton turbines comprising at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies as recited by the independent claims 19, 21, and 23, Moody cannot anticipate independent claims 19, 21, 23, and the claims depending therefrom. For these reasons, the Appellants respectfully request reversal of the foregoing rejections under 35 U.S.C. § 102.

B. **Ground of Rejection No. 2:**

Claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Moody in view of the European Patent. Claim 25 depends directly from the amended independent claim 23. Claim 23 is allowable for the reasons cited above. Therefore, Appellants request that the Board reverse this rejection.

Conclusion

Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: 4/30/2007

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8. APPENDIX OF CLAIMS ON APPEAL

Listing of Claims:

19. A method for operating a Pelton turbine, the method comprising:

opening a needle valve of a needle valve injector assembly and a valve of a high efficiency injector assembly to a direct flow of water from a distributor to a runner; and

controlling the needle valve of the needle valve injector assembly to regulate a desired flow of water from the distributor to the runner;

wherein the pelton turbine comprises at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies to provide a modulated flow of water from the needle valve injector assemblies.

20. The method of claim 19, further comprising controlling the high efficiency injector assemblies and the needle valve injector assemblies to provide the desired flow of water to from the distributor to the runner.

21. A method for operating a Pelton turbine, the method comprising:

substantially simultaneously regulating flow through a needle valve of a needle valve injector assembly and a high efficiency valve of a high efficiency injector assembly to direct a flow of water from a distributor to a runner; and

controlling the needle valve injector assembly to provide a desired flow from the distributor to the runner;

wherein the pelton turbine comprises at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies to provide a modulated flow of water from the needle valve injector assemblies.

22. The method of claim 21, further comprising automatically operating the high efficiency injector assemblies to provide a fully open flow path between the

distributor and the runner in a fully opened position or to fully close the flow path between the runner and the distributor in a closed position.

23. The method for configuring a Pelton turbine comprising:

disposing at least two needle valve injector assemblies between a distributor and a runner of the Pelton turbine to direct flow from the distributor to the runner; and

disposing at least two high efficiency injector assemblies between the distributor and the runner to direct a portion of overall flow of water from the distributor to the runner;

wherein the Pelton turbine comprises at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies.

24. The method of claim 23, wherein the at least two high efficiency injector assemblies and the at least two needle valve injector assemblies are alternately disposed in the distributor.

25. The method of claim 23, wherein at least two needle valve injector assemblies and at least two high efficiency injector assemblies are selected based upon power requirements of the Pelton turbine and a range of flow between the distributor and the runner.

26. The method of claim 23, wherein the at least two high efficiency injector assemblies have identical sizes.

9. EVIDENCE APPENDIX

None.

10. RELATED PROCEEDINGS APPENDIX

None.